

# Dylan D'Silva

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## Education

### UNIVERSITY OF CENTRAL FLORIDA

AUG 2024 – PRESENT

- Degree: Master of Science in Aerospace Engineering
- Focus: Orbital Mechanics / Guidance, Navigation, and Control

### UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

AUG 2020 – DEC 2023

- Bachelor of Science, Aerospace Engineering
- Minor in Astronomy

### RELEVANT COURSEWORK

Orbital Mechanics, Optimal Aerospace Systems, Aerospace Systems Design, Estimation of Dynamical Systems

## Skills and Proficiencies

- Python, C++, Git, MATLAB, FreeFlyer, General Mission Analysis Tool (GMAT), Siemens NX, Systems Tool Kit (STK), SPICE Toolkit from NAIF (Python)
- Adaptability, Active Listening, Critical Thinking, Organization, Oral/Verbal Presentation, Problem Solving, Proposal Writing, Research, Technical Writing, Teamwork, Teaching and Instruction

## Experience

### AUTONOMOUS QUADCOPTER GNC DESIGN

FEB 2025 – MAY 2025

- Investigated the use of autonomous quadcopters in agricultural monitoring practices and racing applications.
- Researched common sensor technologies and obstacle avoidance techniques for autonomous systems and their suitability to each use case.
- Simulated a quadcopter navigating obstacles with a stereo camera, RRT for setpoint determination, and a cascaded PID controller for motor actuation commands using MATLAB/Simulink.

### MARS SATELLITE CONCEPT ORBIT DESIGN AND ANALYSIS

JAN 2023 – MAY 2023

- Designed a Mars satellite constellation meeting stringent science and communication requirements.
- Estimated orbit transfer times, launch windows, and delta-V budgets.
- Conducted thorough analyses of power requirements, link budgets, communication windows using FreeFlyer.
- Researched and simulated fuel optimal low-thrust trajectories for Earth-Mars transfers using NASA's General Mission Analysis Tool.
- Worked with team members to balance the needs of power, communication, propulsion, thermal, and attitude control subsystems, as well as the science payload.

### ASTRONOMY DATA ANALYSIS AND SIMULATIONS

AUG 2022 – MAY 2023

- Analyzed data from the SIMBAD database on Cepheid variables and used the period-luminosity relationship to estimate their distances from Earth to their host galaxies.
- Employed Monte Carlo methods to demonstrate the effect of Malmquist Bias on observations and the results of possible corrections to this bias.
- Fit data of galaxies with active galactic nuclei to Sérsic profiles and Fourier modes using GALFIT to separate observations of galactic disks from observations of active galactic nuclei.

### BITCRAZE QUADCOPTER CONTROL DESIGN

AUG 2022 – DEC 2022

- Designed an LQR controller a Bitcraze Crazyflie quadcopter. Performed state estimation using a Kalman filter.
- Simulated and refined the LQE system in Python using PyBullet, then implemented the system in hardware.
- Implemented a range finder/optical flow sensor, and IMU to provide state feedback control.

### NASA MICRO-G NEXT DESIGN CHALLENGE

OCT 2020 – JUNE 2021

- Designed drive train housing and linear actuation mechanism of a lunar coring device that met the requirements of the NASA Micro-g Experiment Design Teams Challenge.
- Selected components to comply with the Neutral Buoyancy Lab's allowed/prohibited materials.
- 3-D printed components and assembled prototype device for testing in the Neutral Buoyancy Lab.

## Leadership

### TREASURER, ILLINOIS SPACE SOCIETY

MAY 2021 – MAY 2022

- Managed 501c(3) organization finances for technical projects and educational outreach initiatives totaling almost \$50,000 as well as financial interactions with the University of Illinois.
- Assisted technical teams to apply for and receive over \$35,000 in grants and funding.
- Managed funds for the UIUC teams in the Spaceport America Cup, NASA Micro-g NExT and RASC-AL challenges, the development of a student researched and designed hybrid rocket engine, and educational outreach.